To: ATTN: Brad Tague - C-9 Program Manager ID: 194314 03/13/2001 03:18PM p.1 (42,06)

Norman Carstensen - KC-10 Program Manager
USAF
USA

The Boeing Company
3855 Lakewood Blvd.
Long Beach, CA 90846-0001
(562) 593-5511

March 12, 2001
C1-L7T-CC-01-012

BOEING

To: All DC-8, DC-9/C9, DC-10/KC-10, MD-80, MD-90, MD-11, B-717, & MD-10 Operators

Subject: APPLYING CHEMICALS TO AIRCRAFT TO PREVENT SPREAD OF FOOT-AND-MOUTH DISEASE

The enclosed telex has been transmitted to your Engineering and Maintenance departments through the Boecom message system. Because it contains operations-related information, we are forwarding it for your cognizance.

T. J. Melody
Senior Manager/Chief Pilot
Boeing Long Beach
Boeing Commercial Airplane Company

csl

Enc. (6 pages/Boecom Message M-7200-01-00653, 10 March 2001)

All DC-8, DC-9/C-9, DC-10/KC-10, MD-80
MD-90, MD-11, MD-10, & B-717 Operators

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M-7200-01-00653 10 MAR 01
ATA 3200-00 MODEL ALL
APPLYING CHEMICALS TO AIRCRAFT TO PREVENT SPREAD OF FOOT-AND-MOUTH DISEASE
REF /A/ 767 ISAR 98-03-3211-30, DATED 20 FEB 1998, FAXED COPY, 3 PAGES
/B/ HONEYWELL (BENDIX) ALERT SERVICE INFORMATION LETTER (SIL) #710, DATED 10 MARCH 01, .PDF FILE FORMAT

The following message sent to all Boeing operators, all Boeing field service bases and all Boeing regional directors. A copy is provided to to Airline Resident Representatives.

Attachments are being sent to field service bases only for onward transmittal to their affected operators.

SUMMARY

Boeing has been advised that some European Airport Authorities may soon be required to apply chemicals to various parts of airplanes in attempt to prevent the spread of foot-and-mouth disease. Specifically, sodium hypochlorite (chlorine bleach) may be applied to the wheels and tires of airplanes. Other chemicals have been mentioned as well, including citric acid or sodium carbonate.

This message advises that these chemicals pose a significant corrosion risk on metallic parts and can also damage other equipment such as wheels, brakes, and electrical equipment used on or near the landing gear.

DISCUSSION

It is our understanding that these chemicals may be sprayed onto the tires of some incoming or outgoing aircraft. It is our expectation that overspray will contact adjacent areas of the landing gear such as the wheels, brakes, axles, other landing gear structural components, and electrical equipment on or near the landing gear.

Boeing has investigated several cases of fractured landing gear components where the cause of the fracture was traced to exposure to chlorine-based chemicals. An example is discussed in the reference /A/ In-Service Activities Report (ISAR) where an operator experienced two events of fractured landing gear axles. A detailed examination of the damaged axles showed unusually high levels of chlorine in corrosion products near the fracture site and damage to areas of chrome plate, both of which were attributed to exposure to chlorine-based chemicals.

In addition to corrosion on metallic parts, sodium hypochlorite will also damage the heat sinks of airplanes equipped with carbon brakes. One of the brake manufacturers, Honeywell/Bendix, has recently released an alert service information letter discussing the effects of these chemicals on wheels and brakes, with particular emphasis on carbon heat sinks used in some brakes. A copy of this service letter is provided as reference /B/.

Boeing Long Beach, 3855 Lakewood Boulevard, M/C: (D041-0055)
Long Beach, CA 90846-0001, USA/Phone: (562) 593-1249/Fax: 593-3471
BOEING

RECOMMENDED ACTIONS

As a result of the above comments, we recommend that exposure to chlorine based products be discouraged or at least limited to that which is absolutely necessary.

If sodium hypochlorite or similar chemicals are used, we recommend the following precautions:

1) Do not allow sodium hypochlorite to dwell on the aircraft structure any longer than is necessary.

2) Preferably, the sodium hypochlorite solution should only be applied to the tires and not to the brakes, wheels, or the landing gear structure. The application should be by a controlled method which minimizes overspray or spillage. Note that while these chemicals may also have a detrimental effect on tires, they are easily inspected for damage and are frequently cycled on-and-off the airplane.

3) Any area where sodium hypochlorite is used should be promptly flooded with water to ensure complete removal of all residues. Water should be applied in a low-pressure/high volume manner.

4) For airplanes equipped with carbon brakes, it is important that the brakes be exercised a few times during taxi-out since carbon brakes can freeze solid in flight if they are flooded with water immediately before a takeoff.

5) We recommend that grease zerk fittings on the lower portions of the landing gears be lubricated on a more frequent basis to ensure that water and/or sodium hypochlorite residue is pushed out of joints.

If you need further information regarding the subject, please direct your request to your local Boeing Field Service Representative. If your local Field Service Representative is not available you may contact Craig Blankenstein - Renton Airline Support Manager at the address noted on the top of this message or call (206) 544-7500.

Chris Dubuque Systems - Renton
Ray Marzullo
Director - Service Engineering
Boeing Service Engineering
Orgn M-7200 M/C 2M-96

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Honeywell

Aircraft Landing Systems
3520 Westmoor Street
South Bend, Indiana 46628-1373 USA

ALL OPERATORS
SIL #710
ISSUED 3/10/01
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Alert Service Information Letter

Exposure of Aircraft Wheels and Brakes to Sodium Hypochlorite Disinfecting Solution

Reference: Aircraft Wheel Fumigation to Prevent the Spread of Foot and Mouth Disease

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Some European countries are in process of implementing safety precautions to reduce the potential for spreading Foot and Mouth disease. ALS has been informed that one approach being considered is to wash or spray aircraft wheels / tires with a sodium hypochlorite (chorine bleach) and water solution. ALS wishes to advise all operators whose aircraft may be affected that this solution can have detrimental effects on wheel and brake components, particularly on carbon heat stack discs.

Exposure of carbon/carbon brake friction materials to a sodium hypochlorite solution is likely to result in increased oxidation due to the catalytic action of sodium on the carbon materials. The catalytic effect is typically proportional to the sodium concentration. Therefore, repeated exposure to this solution with drying time between applications will result in elevated concentrations with accompanying higher oxidation rates. Oxidation causes deterioration of carbon discs that can lead to disc failure and reduced braking effectiveness. This solution can also have significant corrosive effects on aluminum and steel parts. It may also cause deterioration of wheel and brake pneumatic and hydraulic seals.

Ideally, application of this or other chemicals used for disinfecting purposes should be limited to the tires only. Caution is advised to prevent or minimize contact of this solution with the wheels and exposed parts of the brakes.

ALS urges all operators who may be affected by this action to follow ALS published procedures for inspecting and decontaminating carbon heat stacks that may be exposed to the sodium hypochlorite disinfecting solution. Other wheel and brake components should also be inspected for corrosion or deterioration per the applicable Component Maintenance Manual (CMM) and repaired or replaced as indicated by their condition.

Similar steps should be taken if any other types of chemicals are employed for this purpose unless they have been previously evaluated and approved by ALS.

BOEING 787

IN-SERVICE ACTIVITIES

Customers Organization

SERVICE ENGINEERING BOEING COMMERCIAL AIRPLANE GROUP P.O. BOX 3707 SEATTLE WASHINGTON 98124-2207

Report No. 98-03
20 February 1998

This report provides a review of in-service activities and is for Boeing customer information only.

CONTENTS

Original signed by:

K. de Jonge
767 Fleet Support Chief

For additional information on any of these in-service items, please contact the local Boeing Field Service Representative or 747/767/777 Service Engineering, Airline Support, Mail Stop 04-ER, P.O. Box 3707, Seattle, Washington 98124-2207; Telephone (425) 342-4731; Telex 329430 BOE STA 747S.

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98-03-3211-30 (767) FRACTURED MAIN LANDING GEAR AXLE

(Original Report No. 96-16, dated 12 December 1996)
(Follow-On Report No. 97 09, dated 11 July 1997)

An operator reported a second fractured left main landing gear rear axle. The fracture occurred on a 767-200, with 39,891/5516 hours/cycle. The axle P/N 161T1138-7 (CMM 32-11-50, Item 95 and IPC 32-11-02-05, Item 122) was found fractured at the left hand truck interface after an air turnback and uneventful landing. The axle, brake, and wheel assemblies separated from the truck during take-off.

The same operator found the first fracture on a 767-300, with 28715/3730 hours/cycles, when mechanics were removing down lock pins prior to departure. Closer examination revealed the left main landing gear, rear axle was bent slightly upward. The axle was found fractured through the tow fitting hole after removal from the truck beam.

The 767-200 was delivered in May 1989, and the 767-300 was delivered in August 1990. The landing gear of both airplanes had not undergone overhaul, or the Corrosion Prevention and Control Program.

ACTION TAKEN:

A summary of the metallurgical findings, from the first fractured axle, follows:

1. The axle fractured at the outboard cross bolt holes; and was initiated by a stress corrosion cracking mechanism originating on the O.D. at the bottom of the axle.
2. The origin of the stress corrosion coincided with an area of blistered and flaking chrome plate, as well as associated corrosion and pitting on the axle O.D.
3. The axle material, heat treat condition, dimension, and surface finishes were confirmed to be per drawing. No anomalies in the microstructure were present that may have contributed to the fracture.
4. High levels of chlorine were detected in the corrosion product adjacent to the fracture origin and contributed to localized plating deterioration and base metal attack. The source of the chlorine could not be determined.

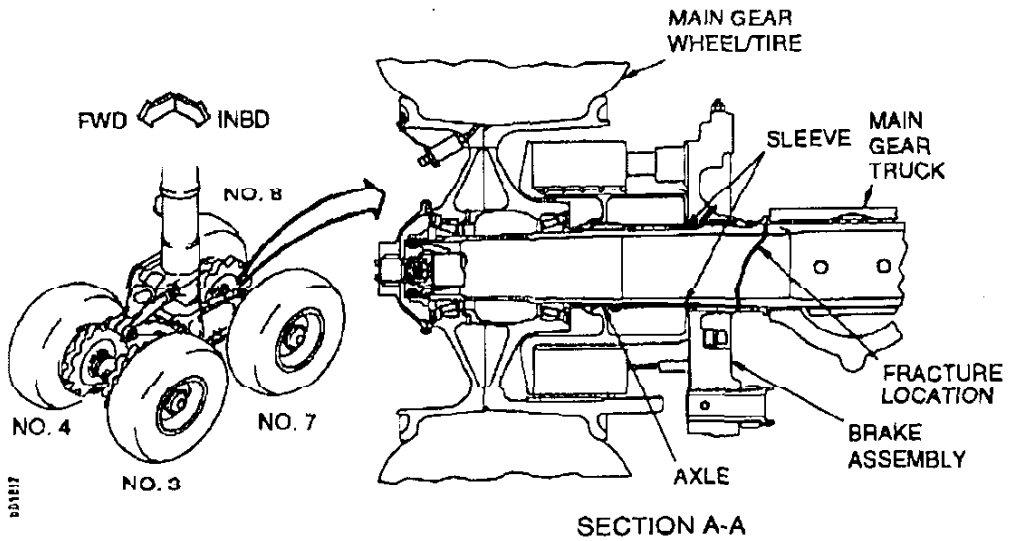
A summary of the metallurgical findings from second fractured axle, follows:

1. The fracture occurred at the in-board most relief radius, about 1.3 inches from the inboard flanged end of the brake sleeve (see illustration next page). A stress corrosion cracking thumbnail was noted on the axle at the six o'clock position.
2. Corrosion and pitting were noted 270 degrees around the axle inboard relief radius and encompassed the entire width of the relief radius at the six o'clock position. Corrosion decreased to a minimum at the twelve o'clock position and was limited to the edges of the relief radius.
3. The axle material, heat treat condition, dimensions, and surface finishes were confirmed to be per drawing.
4. A large portion of the chrome plated area outboard of the relief radius was pitted and partially covered with a dark green substance identified as chromium chloride. Chromium chloride typically is a product of chlorine attack on chrome.

5. High levels of chlorine were found on the fracture surface, in the base metal pits, underneath disturbed organic finishes, and on attacked areas of chrome plating.
6. The source of the chlorine could not be determined; however, several elements were identified which form salts with chlorine, including sodium, potassium, and calcium.

INVESTIGATION STATUS:

We are surveying various operators and overhaul facilities to determine if this level of axle corrosion has been found during overhaul. We are also working with the affected operator to isolate the source of the chlorine and determine whether the condition is limited to specific airplanes, an airport, or certain maintenance practices. Operators will be advised of recommended action (if any) based on our findings. (Status: Open)



MAIN LANDING GEAR AXLE FRACTURE

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98-03-3231-10 (767) INABILITY TO EXTEND THE LANDING GEAR - CONTROL LEVER STUCK IN THE "UP" POSITION (767-SRP-32-0083)

(Original Report No. 97-15, dated 14 November 1997)

An operator has reported that, after departing an airport, the landing gear lever was moved to the "UP" position in order to retract the landing gear. After landing gear retraction was complete, the landing gear lever was attempted to be moved to the "OFF" position. The flight crew was unable to pull out on the landing gear lever to move it to the "OFF" position. The aircraft was then diverted to the operator's main base and the flight crew declared an in-flight emergency and prepared the cabin for a landing gear up landing. During approach to the airport, an alternate landing gear